

Amendments to the Drawings

The attached drawing sheet includes changes to Figure 1. The attached sheet, which includes Figure 1, replaces the original drawing sheet for Figure 1. In Figure 1, the legend "PRIOR ART" is added in order to overcome the Examiner's objection to the drawings.

Attachments: Replacement Sheet for Figure 1.

Annotated Sheet showing changes made to Figure 1.

REMARKS

This Amendment is responsive to the Office Action mailed on July 13, 2006. Claims 1-21 are cancelled. New claims 22-24 are added.

The Examiner has objected to the drawings, indicating that Figure 1 should include the legend --PRIOR ART--. Applicant submits herewith a replacement drawing for Figure 1, which now includes the legend --PRIOR ART--. Withdrawal of the objections to the drawings is respectfully requested.

The specification is objected to due to a reference to the claims therein. The specification is amended to remove the reference to the claims as required by the Examiner. Withdrawal of the objections to the specification is respectfully requested.

Claims 1, 2, 4, 5, and 7-9 are objected to due to various informalities. These claims are cancelled and the new claims are written to overcome the Examiner's rejections, withdrawal of which is respectfully requested.

Claims 1, 4, and 9 are rejected under 35 U.S.C. § 102(b) as being anticipated by Ratzel (US 4,477,753).

Claims 5 and 14 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ratzel.

Claims 8 and 11 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ratzel in view of Hirschfeld (US 5,128,500).

Claims 10, 17, and 21 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ratzel in view of Sander (US 4,389,692).

Claims 2, 3, 6, 7, 15, and 16 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ratzel in view of Matsuki (US 6,657,833) and Newell (US 4,638,850).

Claims 12 and 13 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ratzel in view of Matsuki, Newell, and Hirschfeld.

Claims 18 and 19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ratzel in view of Matsuki, Newell, and Sander.

Claim 20 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Ratzel in view

of Hirschfeld and Sander.

Applicant respectfully traverses these rejections in view of the amended claims and the following comments.

Discussion of Amended Claims

Claims 1-21 are cancelled. New claims 22-24 are added.

New claim 22 is based on a combination of claims 1 and 2, and is directed towards a method for the safety management of a boat thruster control system.

New claim 23 is based on a combination of claims 4, 6, and 7, and is directed towards a safety control device for a boat thruster control system.

Discussion of Ratzel

Claims 1, 4, and 9 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Ishikawa. This rejection is respectfully traversed. An anticipation rejection requires that each and every element of the claimed invention as set forth in the claim be provided in the cited reference. See *Akamai Technologies Inc. v. Cable & Wireless Internet Services Inc.*, 68 USPQ2d 1186 (CA FC 2003), and cases cited therein. As discussed in detail below, Ratzel does not meet the requirements for an anticipation rejection.

Ratzel discloses a safety interlock for an electric positioning system which includes a logic circuit 34 for preventing the application of energizing voltage to a positioning motor in the case of a circuit failure in the drivers stage of a control system (Abstract). Ratzel describes a method for avoiding damage to a motor, to avoid waste of energy, and to avoid short-circuiting.

Claims 1-21 are cancelled. New claim 22 is based on a combination of claims 1 and 2, rewritten to define a method for the safety management of a boat thruster control system for monitoring and preventing burning in of the thruster motor relays and, if a motor relay eventually gets stuck in the "on" position, to switch on an opposite direction motor relay. One object of Applicant's claimed invention is to maintain the safety of the boat, and not necessarily the safety of the thruster motor. In this connection the claimed safety device is adapted to protect the boat if

a thruster should fail. In contrast, the prior art, such as Ratzel, teaches how to detect errors in relay switches and their drive stages, and for halting motors which run due to such stuck relay switches.

Thruster motors and their relays as such do not constitute a significant part of the value of a boat, and it is important to prevent burning-in of relays if low voltage should occur. It is also essential that if they fail working in one direction, or run uncontrollably in one direction, they should be completely neutralized to prevent a collision or undesired course deviation. A side thruster may be used mainly during docking, while coming alongside a quay, another ship or the like, for dynamic positioning, or during passages through narrow straits. If used extensively, the thruster usage may exceed the power delivered by the motor dynamo and the accumulator voltage may drop. In such maneuvering situations it is important to prevent burning-in of relays if and when low voltage occurs, and it is further important to cut the current to a thruster motor if the motor runs uncontrollably in one direction

Applicant's claimed invention solves the foregoing problems by preventing burning-in of the relays and cutting the current to the motor if it runs uncontrollably in one direction. Ratzel does not address the problem of stuck motor relays for boat thruster motors, nor does Ratzel address the problem of burning-in of thruster motor relay switches due to chattering.

Ratzel does not disclose or remotely suggest a method for the safety management of a boat thruster control system controlling an electric thruster motor connected via a relay to a voltage source, where the control systems comprises manual control means commanding the thruster in a port direction or a starboard direction, sending control signals controlling the relay having first and second relay windings, making said motor run in a first or second direction, as claimed by Applicant in new claim 22. In particular, Ratzel does not disclose or remotely suggest Applicant's claimed method of:

- monitoring a supply voltage from said supply voltage source;
- monitoring a state of said first and second relay contacts;
- delaying a re-excitation of said first or second relay windings after a break if said monitored supply voltage is too low to maintain said relay in a stable pick-up state in

order to avoid chattering and burning of said relay contacts;
comparing said control signals with signals representing the state of said first and
second relay contacts to determine whether one of said first or second relay contacts is
erroneously activated to run the motor either in said first or second direction; and
if one of said first or second relay contacts is erroneously activated, actuating the
other of said erroneously activated first or second relay contacts to supply the same
voltage level to both terminals of the motor, thereby interrupting the current to the motor.

The arguments set forth above apply equally to Applicant's new claim 23, which sets forth a safety control device for a boat thruster control system for monitoring and preventing burning in of the thruster motor relays.

As Ratzel does not disclose each and every element of the invention as claimed, the rejections under 35 U.S.C. § 102(b) are believed to be improper, and withdrawal of the rejections is respectfully requested. See, *Akamai Technologies Inc., supra*.

Applicants respectfully submit that the present invention is not anticipated by and would not have been obvious to one skilled in the art in view of Ratzel, taken alone or in combination with any of the other prior art of record.

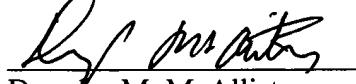
Further remarks regarding the asserted relationship between Applicant's claims and the prior art are not deemed necessary, in view of the new claims and the foregoing discussion. Applicant's silence as to any of the Examiner's comments is not indicative of an acquiescence to the stated grounds of rejection.

Withdrawal of the rejections under 35 U.S.C. § 102(b) and 35 U.S.C. § 103(a) is therefore respectfully requested.

Conclusion

The Examiner is respectfully requested to reconsider this application, allow each of the pending claims and to pass this application on to an early issue. If there are any remaining issues that need to be addressed in order to place this application into condition for allowance, the Examiner is requested to telephone Applicants' undersigned attorney.

Respectfully submitted,



Douglas M. McAllister
Attorney for Applicant(s)
Registration No.: 37,886
Lipsitz & McAllister, LLC
755 Main Street
Monroe, CT 06468
(203) 459-0200

ATTORNEY DOCKET NO.: BPA-116

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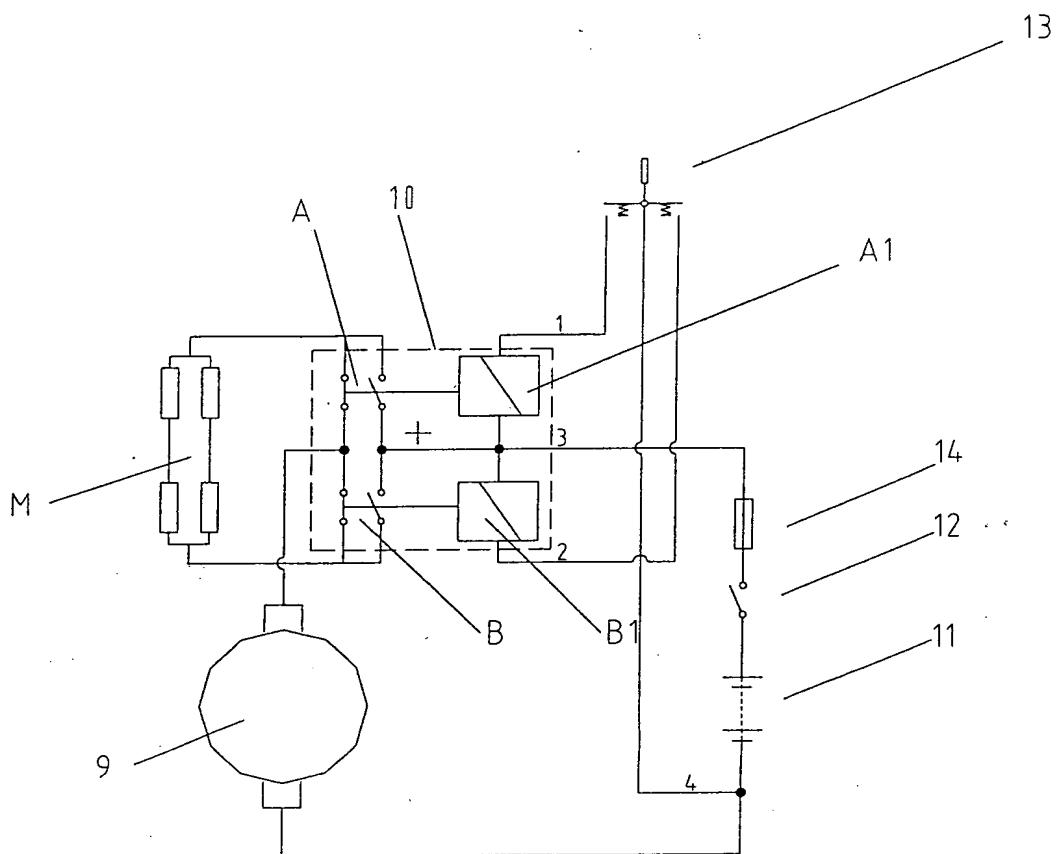


Fig. 1
(PRIOR ART)